

## CLAIMS

- 1       An electro-optical device capable of effecting an alteration in an optical output in response to an electrical signal selected from modulating its amplitude, modulating its phase and switching it, comprising a body of electro-optically active material, waveguides for  
5       passing light through the body, and electrodes for applying an electric field with a frequency in the microwave region to the body, the transverse geometry of the device being such as to maintain adequate phase velocity matching between optical and microwave frequencies, the device having a discontinuity such that the direction of the electro-optic effect is reversed for a portion of the length of the device adjacent its downstream end.
- 10   2       A device as claimed in claim 1 in which the electro-optic material is uniform apart from a single such discontinuity at which its crystal domain structure is inverted.
- 3       A device as claimed in claim 1 in which the electro-optic material is uniform apart from a single such discontinuity at which its poling is inverted.
- 4       A device as claimed in claim 1 in which the electro-optic material is entirely uniform  
15   and the discontinuity is imposed solely by a discontinuity in the design of the electrodes.
- 5       A device as claimed claim 1 in which the electro-optically active material is selected from the group consisting of x-cut and z-cut lithium niobate, semiconductors, poled polymers and poled glass.
- 6       A device as claimed claim 2 in which the electro-optically active material is selected  
20   from the group consisting of x-cut and z-cut lithium niobate, semiconductors, poled polymers and poled glass.
- 7       A device as claimed claim 3 in which the electro-optically active material is selected from the group consisting of x-cut and z-cut lithium niobate, semiconductors, poled polymers and poled glass.
- 25   8       A device in accordance with claim 1, being a modulator.
- 9       A device in accordance with claim 1, being an optical switch.